

A N  
E S S A Y  
Concerning the  
Infinite Wisdom of GOD,  
Manifested in the  
Contrivance and Structure  
O F T H E  
S K I N  
O F  
Human Bodies.

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*Man's Wise Creator never did design  
His Life a lazy Round, and him supine :  
Large Scenes he drew, as Subjects for his Pen,  
Worthy the Almighty Author, and of Man :  
But above all, Man is alone Supreme,  
Vast in himself, he forms a finish'd Theme.  
Thro' all his Structure shines a Power divine,  
He speaks a God in every Stroke and Line.*

*Dr. Leigh's Natural History.*

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*By a Lover of Physick and Surgery.*

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# THE PREFACE.

**T**Hat M A N was not his own Creator, every Man's Reason may convince him. That blind *Fortune* or *Chance* could ever produce M A N, is absurd and ridiculous to think. That the Human Fabrick was erected from any Inherent Laws of Matter, without an Almighty Power, and Sovereign Disposal, is no less foolish to imagin. Every Part, Member, ev'n the wise and fit Preparation and Apposition of the least Particle that goes to the making up the Solids, and the Assimilation of every Drop of the

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Fluids,

Fluids, to our Nourishment, sufficiently demonstrate the Human Frame to be the Work of a GOD whose Understanding (as the most Learned and Wise have ever acknowledg'd) is Incomprehensible, Power Inexpressible, and his Being Eternal, who is pleas'd to discover himself by the Work of Creation, especially in the Make of Man's Body, wherein we find the Image of that Glory which cannot be measured, and of that kind Providence which is exercis'd for All, and of that Goodness which is Infinite.

In this his more than wonderful Work, God speaketh unto us: And as we are Reasonable Creatures, we may thereby be perswaded, that He who made us is GOD. For tho' God may be perceiv'd of Man by this Visible World, and tho' divine hieroglyphical Characters are written on this vast Volume of Sun, Moon, Stars, Earth, Seas, Vegetables, and Animals; yet Man, wonderfully made by God, is an Abstract of the whole Creation, in whom God finish'd the Creation of the World: And as Man was created the Last, so the most Excellent  
of



of the Creatures, whom his Maker endued with a Divine Understanding, to contemplate and serve Him who created him, made him after his own Image, furnish'd him with Reason to govern the World, and all the Creatures therein, and bestow'd on him the Intellectual Nature of Angels, and the Sensitive of Brutes, together with the Rational, which is peculiar to himself: So that *Nazianzen* calls M A N *the Chain which ties both Natures together.* In the Frame of his Body, we find a Representation of the Whole, or a kind of Participation of all its Parts; so that Man is justly call'd the *Microcosmus*, or Little World.

*Gregory Nazianzen* says, God placed on the Earth the Man that he had made, as it were Another World; in the Great and Large World, the Small and Little World.

*Aristotle* acknowledges Man to be the *Mensura Omnium Rerum.*

The Human Body is a most Noble Fabrick, and that wherewith we are the best acquainted, and therefore affords the greatest Variety, and furnishes out most judicious

judicious and solid Arguments for the Being and Providence of God ; for such, taken from the Created Object, more satisfi-  
fyingly informing the Judgment, sufficiently convey Light and Conviction on our Souls, while Metaphysical Arguments do mostly perplex and amaze our Minds, but very seldom demonstratively Conclude what they intend.

These Thoughts, which were the Diversion of some of my wearisome Hours, some, no doubt, will blame, as needless, superfluous, yea an Intrusion upon Man's Means and Time, since this Matter has been so learnedly discuss'd by the greatest Genius's of the last and this present Age, as *Ray*, *Derham*, *Cheine*, *Neumenty*, with many others. But I answer ; Such censorious Criticks may raise the same Clamour and Noise against these worthy Men, after what *Galen*, *Cicero*, and several others had done in this Kind many Ages ago ; and I let the *Reader* know, that I have neither declaredly nor surreptitiously taken so much from those, as they did from the  
Last ;



## *The Preface.*

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Last ; for I don't design, in any Part of this Work, to treat of those Parts they have gone through, but only of such as their large Undertakings obliged them either to be brief upon, or wholly to omit. I am perswaded, that what Parts their prescribed Limits allowed them to handle, shall cause them to continue *claros in Mundo*, while Time remains : And what brief Observations they have made in those Parts which I intend to treat of, shall either be added at the End of every Chapter, or be joyned at last as a Supplement to the Whole ; and if the *Reader* shall have no other Satisfaction from this Undertaking, this shall be one Advantage, that it shall Conclude with a Compendium of the Contemplations of all those Eternally-renowned Authors on this Subject.

If any will yet, whether ignorantly or enviously, charge me with borrowing some Sentences from them, without any Acknowledgment ; all I shall say, is, they are mine, as well as theirs, since I was not obliged to their Communication : For I  
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Declare, I have not perused so much as one Chapter of those Authors since some Years before I intended to set about this Work, 'till after I had brought it to this imperfect State thou now see'st it in. You are here entertained both with Arguments against Atheism, and Contemplations on the sundry Attributes of G O D.

*Farewel.*

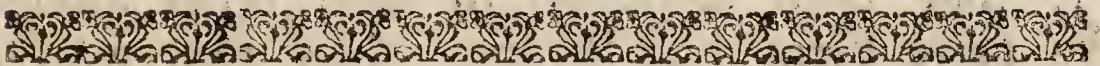


A N





A N  
E S S A Y  
Concerning the  
S K I N of H U M A N B O D I E S



C H A P. I.  
*Of the Hair and Nails.*



FROM these mucous interspers'd *Stamina* that are below the Cuticle, (as *Malpighius* has observ'd) do spring up, at certain Places, fine acute Bodies, term'd Hairs, which being driven forwards from beneath, by succeeding Matter, dry in the Air, and contract a Hardness.



No despicable Contrivance of Wisdom, manifests it self in these Excrementitious Parts, for they are subservient to two different Uses, Common and Special: First they adorn and beautify the Body, and in some Cases indicate the Temperament and Constitution of the Person on whom they grow. They are likewise a Medium, whereby the firmer Attachment of the Cuticle to the *Cutis* is procur'd and effected: For upon the Surface of the Scarf-skin vast Numbers of Parallel Lines appear, which are intersected by others, and at each Angle of Intersection a Hair springs up. Now of what great Necessity and Advantage is it to us, that the Scarf-skin should not hang as a loose Vail upon the Surface of our Bodies? And how requisite is it, that their Adhesion to each other should be more Firm and Strong, than that which can possibly be caused by the Extremities of the excretory Vessels, or by some Matter that is of a mucous Nature? For if so be Things had so been order'd by the Great Architect of the Microcosm, that the Skin and Scarf-skin had been only conjoyn'd by one or both of the just mention'd Means, every external Friction upon the Body, that was attended with any thing of Violence, would have endanger'd their Separation; or the Laxness of the Cuticle would have occasion'd such an Interstice between the two Skins, as might have prov'd a noxious Receptacle of ferous Humours, whose  
fluid



fluid Parts exhaling, the viscid remaining would there stagnate and condensate to our no small Prejudice, by obstructing Perspiration. And the same would hereupon have been the Consequence of a Dilaceration of the Scarf-skin in any Part, as is of the least Excoriation of the Legs in Hydropick Persons, ev'n that Ulcers would have been produc'd. Moreover, if so be that the Cuticle had sustained this suppos'd Dilatation, the grosser Parts of the perspirable Matter condensing, must have render'd the Scarf-skin so very callous, as to put a stop to all Cuticular Evacuations: But by this wise Contrivance of the Divine Being, all these evil Consequences, and many others, are effectually prevented.

Different are the Uses of the Hair, according to the different Places of the Body it possesses. That of the Head, was provided, and does still serve with many, for a Defence against the Cold, and does, by the Warmth it communicates to the Head, greatly encourage and encrease the Perspiration of the Part; this, by the Necessity it was under of being more bare and cold, than some other Parts of the Body, because it is the principal Residence or Habitation of most of the Senses, would have lain open to the Attack of more Diseases than any other Member of the Body, from a diminish'd Evacuation. Those then who have experienced the Fore-runners of these sort of Disorders, and know how often they are Mortal, will be



#### 4      *Of the Hair and Nails.*

the best Judges of the kind Favour done us by the Creator, in making Provision against them.

The Hair of the Head serves also for a beautiful Ornament; and when fine and fair, gains Respect. Lastly, when grown Gray or White with Age, it's a Token of Seniority, and by Sacred and Human Institution, claims a Regard and Veneration to its Owners; *Thou shalt rise up before the Gray Hairs, and the Hoary Head*, says the Scripture; and, *Gray Hairs, of old, were more esteem'd than Bags of Gold*, says the Ancient Proverb.

The Hair of the Eye-brows and Eye-lids, serves, when we look towards the Sun, to break the Rays of Light, so that they might not, by breaking in directly upon the Eye, prejudice the Sight: And for this Reason, when Old Age supplants and takes place of Youth, the Sight beginning to contract Weakness and Dimness, these Hairs are considerably both thickned and lengthned, so that they might the better be a Means of the Preservation of such weaken'd decaying Sight. The Hair of the Eye-lids is further serviceable, in preventing Dust, Flyes, and any small Bodies that float about in the Air, from entring the Eyes and damaging them.

The *Vibrissi* of the Nostrils, together with the mucilaginous Matter which flows thro' them, does serve as a Means to keep the Nostrils from being stop't up, and the Olfactory Nerves from



from being prick'd and inflam'd by Dust and Flyes, &c. that would be otherwise apt to get up them. The final Cause (says Gibson) of the Hair of the Beard, is the external Distinction of Male and Female.

The Hair of the *Pubes*, or *Pudenda*, is provided as a Covering for these obscene Parts, and appear not 'till Persons are ripe, or desirous of Coition: They serve also to convey a good moral Lesson to us, viz. That those Parts which Nature has thus industriously covered, should not be exposed in that shameful and brutish Manner practised by many. The Hair of the Arm-pits is of Service to defend those Parts from that Excoriation, which would be the Consequence of the Sweat, that in great Heat, hard Labour, or violent Motion, is very plentifully discharged in these Parts: This, considering what a great constant Friction there is of the Skin in these Parts, could not have been prevented, but by the Contrivance of Divine Wisdom.

The Hair of the Legs, by its Strength, Largeness, and Tubulosity, is of Service to the Body, by promoting the gentle Evacuation of the perspirable Matter in these Parts; for without this Provision, the Legs, which make a considerable Part of the Surface of our Bodies, and which are but slenderly fenc'd from the Cold, wou'd undergo too great a Diminution of this Evacuation, by reason of the great Rigidity and Contractedness of the Fibres of the excretory



tory Ducts, and the Shortness of the Diameters of their Orifices from the Pressure of the Circumambient Atmosphere, whereto the Legs are more immediately expos'd.

In many Parts of the Body the Hair serves for both common and particular Use; as that of the Head, Eye-brows, and Beard, &c. Here we see that the seemingly most trifling and inconsiderable Parts of our Bodies are of great Service to us, and do, as well as the more noble, demonstrate our Creator to have been Infinite in Council, and Excellent in Working; and that as he has numbred our Hairs, and none of them can fall to the Ground without his Knowledge, so neither can we sustain any Loss through their Want, or fear any Decay, without his Permission.

Further, Wisdom is not only discernable in the Use of the Hair, but also in its just Bulk: For if this be too small, as sometimes it is in the Hair of the Head, the Consequence thereof is troublesome Disorders in that Part, and in the Eyes, proceeding probably from the Retention of the perspirable Matter in those Parts, by reason of the undue Straitness of the Orifices. If they, on the contrary, are too strong and gross, the Cutting of it is attended with an uneasy Sensation of Pain, and sometimes with an Hemorrhage of Blood, as in the *Morbus Polonicus*. The Profit, Beauty, and Necessity of the Hair, may be collected as well from its due Quantity, as its just Size.

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If there be too great a Quantity on the Head, it occasions a Head-ach, *Vertigo*, or Distempers in the Eyes; because the Head being thereby kept too warm, the Fibres are relax'd, their Tension lost, and the perspirable Matter not expell'd by the Elasticity of the Fibres, but retain'd. If, on the contrary, there be too little Hair on the Head, it will not suffice to defend it from the Cold; hence the too great Tension of the Fibres shortens and straitens the excretory Canals; and a sufficient Quantity cannot be propell'd in Perspiration. Finally, That the Serviceableness and Beauty of the Hair might be defective in nothing, it has a comely Situation given it all over the Body; there's no long Hairs on the Forehead; Baldness on the Head is not very common; where Hair might be troublesome or indecent, we find none, as on the Fingers ends, or Palm of the Hand. It's no unprofitable Remark, that the Length of the Hair is wisely proportion'd to its Use, and to the Benefit and Beauty of the Parts whereon it grows; where long Hair is useful and proper, there we either have or may have it; where short Hair is more useful, we find it there plac'd.

I might add, the remarkable Quantity and Bulk of our Hair, proportion'd to the Climates wherein we live, and also several Things might be observ'd from the wise Contexture of a Hair, being several others smaller, wrapt up in one common Integument; teaching us,  
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no doubt, the Minuteness of the extreme Capillary Nerves from whence they spring, and the Certainty of some Discharge through the small Interstices betwixt these contain'd in this common Cover; it also shews the Wisdom of this Curious Architect: Neither were it altogether a barren Field, to meditate upon the Manner of their Growth and Insertion, or rather Rise, by their bulbous Root out of the Skin. But what is already advanc'd, does wonderfully and clearly manifest a divine and tender Concern for us, and for our Welfare, ev'n in these excrementitious Parts of our Bodies; and in that they are so wisely adapted to be beneficial, serviceable, and beautiful to the Body, how willingly should all subscribe to this Truth, that God both is, and has done every Thing both well and wisely.

At the Ends of the Fingers and Toes appear the Nails, of whose Necessity and Usefulness daily Experience gives us Convictions; they were certainly created with Wisdom, and are by no means the Effect of blind Chance. In order the better to discern this, let us take a short View of them, in their Structure, Situation, and Uses; and we don't question but that more Wisdom will be seen in these small horny Bodies, than in the whole System of *Epicurus's* Atoms. Their Structure seems to be only the Covers or Sheaths of the pyramidal *Papillæ* of the Skin in those extreme Parts, which lying close upon each



each other, dry and harden. Their Growth is effected by the Apposition of Parts to the Roots, which thrust forwards the others, and render the Nails Insensible. The Uses to which they are subservient demand such an Insensibility in them; for the small Twigs of Nerves which run to the Extremities of the Fingers, render those Parts exceedingly Sensible, and expose them to very sharp Pains; upon them these Horny and Insensible Bodies are placed that they might be for a Defence to them, and impart to them a Fitness to handle rough and hard Bodies, without such exquisite Pain, and yet do no Prejudice to the Sense of Touching, to which these Branches of Nerves at the Fingers Ends are so necessary. How impossible would it have been for us to have undergone the Fatigue of hard Labour, without great Prejudice to these Parts, had not the Divine Being provided such a Wall of Defence for them!

A further Use of the Nails, is, that they, like Hooks, are serviceable in drawing any thing to us, and are as Weapons to defend us from the Trouble that arises to us from some small living Creatures that often make their Habitation upon the Surface of our Bodies, and to allay the uneasy Titillation by scratching.

Moreover, the Transparency of the Nails, and their close Connexion to the Capillary Blood-Vessels, do occasion that their Colour is oft an Indication of the State of that Fluid, or of an Indisposition of the Body: In a *Syncope* or



Ague they exhibit a Paleness ; in a *Plethora* they are red ; and in a *Jaundice*, black, yellow, or green : Wherefore *Hippocrates* took particular Notice of them in his Patients.

Let us, in the last place, view the Situation of the Nails, and this will demonstrate that they were design'd and form'd by a Wise Creator. They are placed upon the Extremity of these Parts, in which the Sense of Touching is more particularly seated, and that do most eminently serve for the Guard and Defence of the whole Body, and for the Performance of most of the Actions of Life, being Parts that would have been in the greatest Danger of receiving Prejudice from the handling both hard and smooth Bodies.

What other Place of the Body could we assign for them, wherein they would better have answer'd these Designs ; nay, where they wou'd not rather have been hurtful and prejudicial, than beneficial to us ? What Instruments cou'd we have invented, and fix'd to those Parts, that wou'd have been of the same Use to us. Seeing that they are thus necessary and useful to us, great Care is taken for their Preservation and Continuance. When other Parts languish and decay, these grow. They are strongly attach'd to their proper Places, that they might not be rubb'd off : They are ty'd to the Parts immediately under them, or bound by a strong Ligament at their Roots to the Fingers, and  
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are embrac'd at both Roots and Sides by the Skin. Now if ev'n the senseless Parts of our Bodies are so wisely contriv'd, and so admirably adapted to their proper Uses ; how irrational and absurd must it be, to deny that the whole Body was the Product of an infinite and Eternal Mind ? And how contrary to the Dictates and Light of Reason and Nature must they act, who assert and pretend to believe that there is no God ? How fully and irresistibly would every Creature strike Conviction upon the Mind, was it but duly attended to, and seriously consider'd ? What shall we reckon to be the Cause, that some are so fond of Atheism and Incredulity, and so eagerly engaged in Pursuit after a Negative ; when it is rather the Part of a reasonable Mind to be open to Conviction, and to endeavour to obtain a Certainty of Knowledge of every Thing that is, or may be. How base is it to be desirous, that the Notion of a God, who is so entirely necessary to the Happiness and Welfare of the World in general, and of Mankind in particular, should imply a Contradiction, when there is not the least Reason for a Suspicion in this Nature, and when every Part of our Bodies so plainly demonstrates his Existence.





## C H A P. II.

### *Of the Cuticle or Scarf-skin.*

**A**N Infinite and Incomprehensible Wisdom and Contrivance in the Creation of this Part, sufficiently appears from the Consideration of its Mechanism, due Density, and Use. Its Mechanism being compos'd (as late, and best Anatomists have observ'd) of innumerable Scales like those of Fishes, lying Lay upon Lay. *Lewenhoeck* computes, that one of these Scales contains Five hundred Excretory Ducts; and that one Grain of Sand, whose Diameter is the hundreth Part of an Inch, will cover Two hundred and fifty of these Scales; so that one Grain of Sand will cover One hundred and twenty five thousand of those Orifices through which we perspire; and between these Scales open the Excretory Ducts of the miliary Glands of the true Skin. And though this Structure of the Scarf-skin may be denied by some, who are better known in the World by their Pride, than for either Learning, Prudence, or Ingenuity; yet we are sure this Cuticle must be either something or nothing; that it is the first, our Senses, and the daily



daily Benefit we reap by it, convince us ; and if something, then it must either be a Scarf made up of Particles of different Figures and Sizes, or of Particles Homogeneous, or all of the same Figure. That they are the last, is but rational to conceive, because a more elaborate sort of Fluids ; and Fluids are susceptible of any Figure, from the Action of the Solids, whatever they were ; and also, because the Vessels which emitt this Matter are all of the same Kind and Figure as far as we know, tho' in different Bodies, and in different Parts of the same Body, the Orifices may differ in Size. That the Figure of the constituent Parts of the Scarf-skin should be Planes or Scales is as rational to believe, since the whole Scarf-skin is only the grosser Parts of the perspirable Matter cleaving to the Skin after its Discharge, which the Pressure of the Atmosphere on one Side, and a Resistance and Weight of our Bodies on the other side, should cause some few immediately adherent or contiguous Particles to spread out and form Scales ; especially when the Matter just discharged with its Moisture from the Mouths of the Vessels is susceptible of any Figure when compressed. And that the Scarf-skin is only the Condensation of the grosser Parts of the perspirable Matter upon the Skin, is manifest from its quick Reparation after Blisters ; and also from the different Skins thrown off by one Blister.

Further,

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Further, that the mucous Matter is form'd into Scales, is not only probable from Reason, and Microscopes, but is evident from the naked Eye when we frequently see full large broad Scales, as on the Lips, Hands, but especially where the Skin is become callous: But above all, the Scales comb'd out of the Head is a clear and manifest Proof. But whether the Scarf-skin were form'd of Scales or not; yet does it not infringe or weaken the Truth of our present Argument. Had this Scarf-skin been a compacted Membrane without these Apertures or Pores, how quickly had the Thread of our Lives been cut, when every Man's Experience convinces him of the many tedious and dangerous Diseases arising from a Contraction of these Pores, and Retention of Part of that Matter they ought to discharge, as after it shall more fully be made to appear.

Had the excretory Ducts of the miliary Glands inserted into the Cuticle been larger, or the Diameter of their Cavities longer, then we should suddenly have lost the more Fluid Parts of our Blood; yea, the Nutritious Juices of our Bodies must have exhaled, and only a thick grumous Mass been left behind, which should first have become irregular in its Circulation; and quickly come to a total Stagnation in all the Vessels over the whole Body, whose Consequence must have been immediate Death. Or to dilute the Blood, in  
order



order to maintain its Circulation, we should have been obliged to a frequent and uneasy swallowing down of thin Liquors, to preserve the Particles of Blood at their due Distance, and to prevent their too great Attraction and Coalescences, this must have loaded us with a greater Quantity of Fluids in our Blood, than the Vessels could easily have contain'd; especially, when, still a greater Part of it would have consisted of gross Particles, not sufficiently broken to pass the milinary Glands: Whence would have proceeded first Dilatations, and then Eruptions of the Vessels, succeeded by Inflammations, Impostumations, Ulcers, and Gangrenes, or Mortifications. Or if by some unknown kind Fate, we had outlived some Time; yet had we been unfit for any Business, because of the extreme Laxness and Weakness of the distended Fibres of our Solids; being the Vessels had taken up too much Space, whereby the Fibres should have been so separated, as to be well nigh torn from one another: Here the Pow'r of the Solids over the Fluids had been entirely lost, and our Days had been spent in Laziness, Sighs and Groans without Activity, Pleasure or Judgment.

Had the Diameters of the excretory Ducts been shorter, and their Cavities straiter, or the Interstices of the Scales smaller, then had the Evacuations of the Skin been diminished; the Bloods Quantity increased; the Elasticity  
of



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of the Solids been weaken'd, our Bodies been overflown with, not only unnecessary, but hurtful floating Sizes and Serosities.

Had the excretory Ducts been of the same Size of which now they are, but fewer in Number, the last Inconveniences must have followed; had the Pores been more numerous, and the Diameters of the Vessels the same, too great Evacuations must have been the Consequence; had the Scarf-skin been compos'd of meerly mucous Particles, condensed together in a spherical Figure, then had the spherical Globules stop't up the excretory Ducts of the miliary Glands, and thereby greatly diminished Perspiration; so that we see both the Mechanism of the Scarf-skin, the Number and Size of its Pores, are every way best and most agreeable for the Preservation, and Comfort of Life.

We shall next consider the Density or Thickness of the Scarf-skin: Had it been thicker then it is, our Sense and Pleasure of Feeling had been so much duller; we should have been much deprived of one of the greatest Comforts of Life; every Member of our Body had likewise been in Danger from hard and rugged Bodies approaching too near us, without any considerable Notice of them, provided we had not been wounded or bruised by them. And besides, how helpless wou'd our Case have been, upon the Attack of every small Inflammation in any Part, how few must have recovered of Quinsies, Pleurisies, &c. as we see



is frequently the Fate of Ditchers, and such as work in Water. And truly, it would be next to impossible for us to escape such mortal Distempers, because of the Accumulation of Fluids, especially in the capillary Vessels on the Surface of the Body from the diminish'd Evacuation; unless kind Providence had furnish'd us with a Coat of thick, short Hair, having large Tubes in it, for sending out of the Body the Matter of Perspiration; as Mice, and some other Animals have.

Had the Scarf-skin been much thinner than it is, the Handling of what now is agreeable and pleasing to us, had then been painful and tormenting; our Perspiration had been dangerously great, and the serous Part of our Blood must constantly have ouzed through: Design is manifest in proportioning the Thickness of the Scarf-skin to the Use of the sundry Parts of the Body; for had it been all of one Thickness over the whole Body, then must we have felt as well with our Heel as our Hand; but we are sure, that the more immediate Seats of this Sense are lined with a thinner Cuticle than the other Parts. Wisdom is also evident, in adapting the Thickness of the Scarf-skin to the different Businesses and Employments of Life; and especially, in that it is not quickly worn off from the Hands of hard Labourers; but on the contrary, the often Pressing of this Cuticle against external Bodies, squeezes out a Mucosity from the sub-

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jacent Parts, which there dries, hardens, and becomes small Scales; the more of which Liquor is pressed out, the greater is the Number of Scales, and the more callous is the Skin; whereby the Man is more safely and chearfully enabled to follow his Labour. But suppose the Case had been otherwise, how soon had the Scarf-skin been worn off? Man must have lived in Misery, or Laziness: If he had followed Labour, the Wounds, the Dilacerations that must inevitably have happened in his hands, and other Parts, must in a little time have made such Discharges, that he behoved to have discharged his Soul with them.

We shall, lastly, consider its Uses, which shew it neither a Contemptible Part, nor of small Service; for our Wise Creator has given it us as a Fence to guard the Extremities of the Nerves of the true Skin (which are of exquisite Sense,) from the Injuries of Air, whether its Heat, its due Compactedness preventing a too large Perspiration; or its Cold, whereby the Pores are so straitened, as the tender Parts lying immediately under may not be too-much hurt. 'Tis also a necessary Medium to preserve the Nerves of the true Skin from the offensive Touch of external Bodies, which might hurt the Nerves, and dull our Feeling: It likewise prevents the too great and sudden Waste of our Bodies, by hindering the Eruption of the *Serum* out of the capillary



lary Vessels, as it happens where the Scarf-skin is rais'd or rubb'd of: And if such a large Quantity of *Serum* be discharged at one Place, upon a designed or accidental Removal of the Scarf-skin; how great a Discharge had there been from the whole Surface of our Body, if kind Providence had not bestowed this Screen upon our Body? It moreover is very serviceable, to preserve the Extremities of the capillary Arteries and Nerves from drying; and thereby at once prevents our Torment, and preserves that Sense of Feeling assigned us by the Author of Nature.

It's further of Use for beautifying the Skin, by filling up the Asperities of the true Skin. The Scarf-skin is also profitable to the inducing and keeping that amiable Red and White Colour of the Skin; the Red is owing to the Superficial capillary Arteries on the Surface of the true Skin, the other being naturally White. Is there then such a wise Contrivance in this Part, which yet is without all Sense and Life? Is it so admirably well every way adapted and fitted for its Uses, that it could not have been otherwise without great Hurt and imminent Danger to us? Then surely it was only Infinite Wisdom, and Almighty Power and Goodness, which wrapt up our whole Body in such an excellent, beautiful, and necessary Scarf.





### C H A P. III.

#### *Of the external Feeling or Touch.*

**W**E shall now come to make some brief Observations upon Feeling, and the Instruments of it, viz. the *Papillæ Pyramidales*, which lie immediately under the Scarf-skin, and are the Extremities of the Nerves of the Skin. Now this Sense may be divided into two, Sensation, and Touch; by the first we mean, that Feeling which is scattered all over the Body, and whereby all the Parts, both internal and external, become sensible of Pain, whether pungent, throbbing, or fix'd, and all are rendered incapable of sustaining Loss or Damage without our Knowledge. This, certainly, must be a great Happiness to us, and must lay us under Obligations of Thankfulness to the Author of our Beings: 'Tis an Instance of great Kindness in him, to express so great a Concern for our Preservation, as he has done, by giving us such a Quickness of Pain: But this we shall not here insist on. The other Part of this Sense we call Touch, and by this we mean that Property of our Bodies, whereby we, by putting our Fingers, or other outward Parts

to



to other Bodies, are enabled to make a Judgment of their Roughness or Smoothness, Fluidity or Solidity, Heat or Cold; the Seat of this is in the Skin: Let us spend a few Thoughts on the Manner how, and the Instruments whereby this is exercised, and see if it carry not in it plain Intimations of a Design, Power, and Goodness.

First, then, take Notice of the Manner how this is excited, and this is by the immediate impulse of the more Fluid Part of Bodies upon these *Papillæ*; which impulse being communicated to the Organs of Sense, Nerves, and Brain; this Intelligence is thereby convey'd to the Watchman, always in a readiness to receive it. Great is the Velocity of the Conveyance of this Intelligence, and necessary it was it should; otherwise approaching Danger might have broken in upon us, and brought Hurt to us for want of due and timely Notice. The Parts of our Body might have been broken, cut, or bruised, before the Signal had reached the common Sensory, and News had been given of the hurtful Enemy. Not only is Intelligence of approaching Hurt or Danger quickly conveyed, but the Motion also, and Endeavour to rescue the Part hurt or endangered is as speedy; by reason of the Contraction of the Fibres of the Muscles occasioned by the instantaneous Influx of the Arterial and Nervous Juices into their *Tubuli*. Now, if the Notice of approaching Danger  
or



or Hurt had been speedy, and immediate Relief had not also been at Hand, we should have received no Advantage by it. Nay, should we not have been apt to take up Accusations against our Maker, as guilty of Folly or Cruelty, in giving us Bodies so extremely sensible, and yet so dull and helpless? Should we not have charged him, as delighting in our Misery, having given us Bodies so quickly perceptible of Pain, and subject to so many Inconveniences from without; and yet so destitute of Power to evade them: But far be it from the Divine Being, who is so Mighty in Wisdom, who is infinitely Happy and Blessed in the satisfying and uninterrupted Enjoyment of his own Perfections, to leave himself obnoxious to such a Charge; he has done all Things for our Good in this Respect, as well as others.

Wonderful is the Harmony that there is between the Notice of, and Relief against Hurts and Dangers! Wonderful is it, that the Hands and Feet, tho' at the greatest Distance from the Brain, should have as sudden and suitable Assistance afforded them, as any other Part of the Body, tho' ever so near to this Magazine: So strangely swift is the Circulation of the Nervous Juice through its Vessels; that tho' the Brain be placed at the upper End of the Body, as the most convenient Situation for the Senses reposed in it; yet have the most distant Parts no reason to Complain  
of



of this their distant Position, by reason of the Speed whereby Notice is given of Danger to the Brain, and of Relief from it.

II. Let us take a View of the Instruments, whereby this is executed, and these are the *Papillæ Pyramidales*. And here let us contemplate the Wisdom display'd by God in their Structure and Situation : For, first, they are Nervous arising from under the Skin, from the naked External Membrane ; and their proceeding from these very Parts that convey the Nervous Juyce to the whole Body, is the Reason of their excessive Sensibility. No Cover could have been so effectual to our Preservation from outward Danger, as this, because it is so quickly sensible, and so speedily excites to bring proper Relief for our Defence : And as they are sensible, so are they soft Nipples, that they may be void of Pain ; and the more easily yield to external Pressures, and hereby the better assist in making Judgment by Touch of the Equality or Inequality of the Surface of Bodies, and of their Solidity : By this Readiness to yield to the Contract of external Objects, the Cuticle which interposes between them, and the Body felt upon, is preserved from Destruction, and these injuring Wounds or Hurts, that might come to the *Papillæ* themselves, by every sudden and unexpected Impulse of external Objects upon them, either in their Passage by us, or Casual Occurrence to us is prevented.

These



These Nipples are not only soft, but are also of a Pyramidal Figure : Now a Pyramid is a Figure composed of Triangles, that have a common Base, and meet in the same *Vertex*. No Figure was so suitable for these *Papillæ* as this, for the Origin of these being the Extremities of the Nerves of the Skin, and jetting out from its Surface, must have a broad Base, and terminate in a common *Vertex*.

Betwixt these *Papillæ*, the excretory Ducts of the miliary Glands are emitted from the *Cutis* to the *Cuticle*, in order to discharge upon it their Contents. If therefore these Nipples had not been of this Figure, their Sides would have been so compressed by themselves, upon the close Pressure of external Objects against them, as to have straitned or shut the interjacent excretory Ducts : Their rising to a vertical Point, makes them more ready to receive the Touch of Bodies, than if they had been a smooth Plane ; hereby we more easily apprehend and perceive the Touch of slender and little Corpuscles of Matter, than if they had lain flat, as is clear from the Instance given us by *Grimaldus*, of a Man that came to the Duke of *Hetruria*'s Palace, who was capable to judge of Colours from the Touch, without the Assistance of the Eye.

Another Piece of Wisdom also is discernible in the Provision that is made for the Prevention of the Noxious Driness of these *Papillæ*, by the due Moisture that is constantly commu-



communicated to them ; the Consequences of such a Dryness would have been a considerable Diminution of this Sense of Feeling, and Prevention of Pleasure, Perception of Pain, and a depraved Judgment of Objects ; the total Degeneracy also of these prominent *Papillæ* into hard callous Bodies, or a cartilaginous and ligamentary Solidity, is prevented by this Moisture constantly communicated by the Glands, whereby likewise the circumjacent Parts are watered, so that they might be continued smooth, slippery, and soft, and the Coalescencies of the excretory Ducts is provided against.

Each of these *Papillæ* is inclosed in a double or treble Coat of the same Form with it self, and are thereby detained in their proper Places, and preserved from external Injuries, and from too excessive Expansion of their own Substance, either from their own nutritive Juice, or the other Liquors whereby they are watered. These Coats, *Malpighius* calls a Reticular Cover.

As Art and Contrivance appear in the Formation and particular Size of these Nipples, so does it also in their wise Disposition and Situation ; they are not confined to one Part or Member of the Body, but are spread all over it, so that no Part of it might be destitute of that Assistance and Care necessary for its Preservation.

Nay, not only is this Sense of Feeling placed in all Parts of the Body, but also upon the Surface of it, so that the most minute Fibres

partaking of Life might not be moved upon without the Notice of the Mind.

Further ; A convenient Covering or Fence, viz. the Cuticle, is provided for the Instruments of this Sense, which is of due Thickness for their Defence in all common Cases, and is no Hindrance to their regular Operation. Greater is the Number of these *Papillæ*, in those Parts that are most commonly and especially made use of, and exercised in Touching, than in others, that we might be enabled to make a more full and clear Judgment of those Things we handle.

Now, does there not in all these Things appear the most full and convincing Proof of a Deity ? Does not a wise Intention manifest it self in all the Instances we have observed, with respect to the Sense of Touch ? Is it not an Argument of a great Wisdom and Goodness, that the Covering of our Bodies was not hard and insensible, like the Nails and Scarf-skin, but of extreme Sensibility to warn us of approaching Evil or Danger ? Does not this also shew forth it self, in the due proportioning of the Degree and Quantity of this Sense in different Parts of the Body, to the different Need or Want they have of it ? Had the Sense of Feeling been the same in all Parts of the Body, it would rather have been an Uneasiness than a Pleasure to us, for it would have furnished full Occupation to our Minds, and diverted it from more necessary Things.

Again ;



Again ; Had not some Parts of our Bodies been more particularly the Seat of Touch, as the Ends of the Fingers and Toes, then had the Sensation in them been either ineffectual to have made a sufficient Distinction, or would have deprived them of a proper Satisfaction ; and therefore in these Parts the *Papillæ* are not only more numerous, but also more elevated and raised, and more immediately and closely joyned to the Scarf-skin ; which is also thinner in these Places, *viz.* on the Ends of the Fingers and Toes, to fit them for their Use, and rendering the Mind more readily apprehensive either of the agreeable or disagreeable Force of Objects upon them.

But to Conclude this Chapter : The Measure of this Sensation in the whole Body is exactly adjusted to the Number of these small Appendices ; to their Prominency on the Skin, and to the Density of the Cuticle in that Part.

The Sense of Feeling is likewise made to differ, according to the Variation of those Lines or Furrows that are upon the Skin : For where parallel Lines are intersected by others of the same Nature, and the intermediate Spaces are of a rhomboidal Figure, there this Sense is duller ; where they are spiral, there it's more acute : For whereas these *Papillæ* are perpendicular in other Parts of the Body, here they run extended according to the Length of the Parts, so that the Mind might thereby the better apprehend or understand the Object felt upon.

## 28 *Of the Cutis or True Skin.*

The just Consequence then of all that we have been saying under this Head, is, That this Sense of Feeling is most incomparably well and curiously spread over the whole Body, and was absolutely necessary for its agreeable Existence.



### C H A P. IV.

#### *Of the Cutis or True Skin.*

**A** Pre-existent Mind is most visible from the Frame and Make of this Part, if we consider its different Parts, the wise Position of these Parts, and their fundry Uses. The first remarkable Part, is the infinite Number of the Pyramidal Nipples, (of which in the last Chapter.) The next Part is a Membrane or Web of Nervous Fibres, (whose Extremities the *Papillæ* are,) and other Vessels. In this Part of the Skin is a manifest Piece of Design; for, as the learned *Derham* justly observes, it serves to secure, guard, and fence the whole Body, to brace in and compass about every Part; both to resist external Injuries, and to prevent an excessive Distension or Dilatation of the Parts immediately under it. In the deepest and lowest Part



Part of the Skin is an infinite Number of Miliary Glands wrapt up in Fat ; these separate the Matter of insensible Perspiration and Sweat, (of which in the next Chapter.)

Look now to the Situation of every Part of the Skin, the Nipples are as the Centries and Watch, to take Notice of, and warn us against Danger ; and therefore they must lie on the Outside of all the sensible and living Parts of our Bodies, for the Safety of all ; the next Provision, is a proper Coat, or strong Fence to brace in the whole Body, and for this, nothing could be invented so fit as a Membrane of strong Nervous Fibres, wherefore they are bestowed ; Next, Care is taken for Instruments to discharge the sufficiently grinded attenuated and useless Parts of the Blood from the Body, that they may not lie a heavy, troublesome Load in the Vessels. They are planted on the very Surface of the Body, immediately under the Skin ; but had these Glands lain on the Surface of the Skin, their Secretion and Excretion had been marred by the Cold, and a thousand other Accidents ; the vast Quantity of Fat wherein they are wrapt up had been at liberty from the restraint of the Skin, to grow to an excessive Bulk ; the Ducts of the Glands wou'd have wanted a Wall to keep them straight and perpendicular : Hence they would have been choak'd up with Fat and an œdematous Swelling like those of the *Peritoneum* in a Dropsy of its Glands,



## 30      *Of the Cutis or True Skin.*

Glands, must have follow'd, and the whole Skin been render'd callous. Or had the Pyramidal Nipples been placed on the Inside of the Fibrous Membrane, where the Miliary Glands are, the Sense of Feeling had been spoil'd, yea, almost lost; whole Pieces of Skin might have been torn off without our Knowledge, or great Pain; we must always have been upon our Guard, and never sure of Safety. So that Dr. Crook, in his *Cosmographia*, speaking of the wonderful Contrivance of Man's Body, might well say, "If all the Angels should have spent a thousand Years in the Framing and Making him, they could not have cast him into so curious a Mold, or made him like to what he is." Galen also offer'd *Epicurus* a hundred Years to alter the Situation, Figure, or Composition of any one Part of the Human Fabrick; for it was impossible to make it after a more Useful, Beautiful, and Perfect Manner, as he doubted not but *Epicurus* would at last be obliged to own.

But then the Skin is also for an Ornament and great Beauty to the whole Body, being so well adapted and fitted for the Use of every Part of the Body. God's Wisdom is further remarkable, in adjusting the Skin to the Use of the different Parts; and in proportioning its Laxness and Compactedness to the Seasons of the Year, and Climate wherein Men live, by preserving our Bodies from too great a Dissipation of their Parts, and  
Strength



Strength in Heat, or yet retaining unmeasurably what is superfluous in Cold. It's also no small Act of Kindness and Power of God, that he preserves the due Laxity of the Skin, and hinders its too great Contraction, ev'n to compress or shut up the Excretory Ducts of the Miliary Glands, and thereby obstruct all cuticular Evacuations, especially in the Bodies of the Poor and Exiled, who are either deprived or thrust from the Necessaries of Life, by the Rich or Persecutor. And yet History informs us of such, who have been exposed to the Mercy of the Storms and Tempests without Hurt, further than what the Enemy did, tho' stript Naked: What a remarkable indulgent Act of Providence and Goodness was this? And yet we know it is true, while the Rich who enjoy all Plenty and Tranquillity, are not free from the Attacks of Danger by Cold. Observe also, the Goodness of our Sovereign Maker, who preserves the Labourer amidst his hard Toil, Sweating, and Faintness, which either his Business or Necessity, or both obliges him to, without Hurt or Prejudice; while the Rich cannot with Pleasure enjoy the refreshing Shades of their cool Groves, because of the Heat.

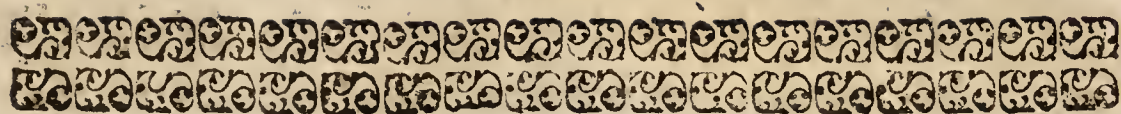
Lastly, put all together, and see the Depth of Wisdom manifest in the Contrivance of this one Coat; here's Provision for the Bodies Safety by Sensation, here's a Brace or Girdle to bind up the whole Body, here's Strainers  
to

## 32 *Of the Cutis or True Skin.*

to separate the superfluous Parts of the Blood; here are Conduits for carrying off the strained Matter, here's Provision for Beauty and Ornament, here's a fit Juice to preserve all the Parts moist from drying, here's Prevention of Pain thereby, here's an insensible Vail or Scarf to preserve all the sensible Parts, here's Provision for the Preservation of the Skin of labouring Men: But if any should object that all this is only what the Beasts have, I answer, suppose it were so, this only heightens the Wonder; that since they are for the Use of Man, such an infinite Provision is made for this one Creature, such Multitudes of Creatures must serve and feed him, and all these created, preserved, and provided for with so much Wisdom, Power, Care, and Concern; must we not say, *What is Man, that God is thus mindful of him? Or the Son of Man for whom He thus provides; whom thou hast crowned with Glory and Honour, and mad'st him have Dominion over the Works of thy Hand, and hast put all Things under his Feet? O Lord how excellent should thy Name be in all the Earth?*







## C H A P. V.

### *Of the Evacuations of the Skin.*

**T**HE first remarkable, and only sensible Evacuation of the Skin, is that of Sweat; wherein also appears a plain Piece of Design, and that from the Situation, and Structure of these Instruments of Secretion, and the Benefit of the Evacuation it self: As to the Situation of the Secretory Instruments which is immediately under the Skin over the whole Body; it was necessary these Strainers should lie immediately under the Skin; for if they had been deeper, it would have prov'd too far a Stretch for these tender flexible Canals, to have convey'd the contain'd Fluid out of the Body, without Danger of being choak'd by the Pressure of the interjacent Solid Parts: For the Skin is as a Wall to support and defend them from Injuries; but if they had lain deeper, they must have been loose without any Strength or Uphold: They could not have lain betwixt the Scarf-skin and Skin for the Reason assigned in the last Chapter; and also they would have been parched and dryed up. It was likewise necessary that they should be well cloathed with Fat, that so their

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Flexi-



Flexibility and Dilatability might be the better preserved, by being continually lubricated with this oleaginous Matter; and besides to prevent the Pain, Tearing or Erosion of the small Glands from the Pungency of the Salts where-with the Blood is often loaded, as we see fall sometimes out in the Glands of the Reins.

It was fit that these excretory Vessels should be placed over the whole Body, that all the Parts of the Body might receive equal Benefit thereby, and be equally freed from a hurtful superfluous Load.

Their Structure is also considerable, which is Glandular, no other Instrument being fit for Secretion: Their Emunctory Vessels have each an Orifice always open under the Scarf-skin, when their excretory Vessels are dilated for the more ready and easy Discharge of the separated Matter. These Emunctory Vessels are covered with an hollow Valve placed under the Scarf-skin, the more expeditiously to transmit or restrain the Humour.

It's further worthy our Regard, that these excretory Ducts are ordered of such a Wide-ness, that upon the Relaxation of their Fibres to the pouring out of Sweat, the obliquely interspers'd Ducts of insensible Perspiration are thereby compress'd and shut up, to prevent a too great Discharge of the Parts of our Body; and on the contrary, where these Sweat-discharging Vessels are, either by the proper Elasticity of their Fibres, or from any External Causes, contracted



tracted and drawn up, the Vessels of insensible Perspiration are again widened, for the Discharge of their Office.

A Piece of Art is also apparent, from the great Benefit due and moderate Sweat is of to Men: It's beneficial in all Diseases from Cold, whereby a *Plethora* would be procured, and the Vessels lose their Tension and Force over the Fluids, and the Blood be rendred fizy: Sweat is also of great Service in all cutaneous Diseases, provided the Blood at the same time be carefully diluted; for thereby the Salts sticking in the Glands are broken, dissolved, and carried off, the Secretory Passages scoured and cleansed: Sweat also raises up to Health in the Lues, Plague, or in any Case where there is a sharp impacted Humour, or a Foulness sculking in the Glands, or noxious Salts in the Blood: Gentle Sweating in very hot Weather is also of Use; for by the Heat, the Solids are relaxed and weakened, the perspirable Matter is stopt, and by its Sharpness, sticking in the Canals, irritates their Fibres, which then Sweat pushes forth, by the Turgescence of the Sweat Vessels; and likewise carries off another Part of the digested Matter, which was retained from the Laxness of the Fibres. Sweat also comes in as an acceptable Friend to such who indulge themselves too much freedom with their Bottle or Pot; for a repeated strong Contraction of the Solids throws off a part of the superfluous Blood by Sweat. In Phlegma-



tick, and Watery Constitutions, the glewy, pituitous, and ferous Humours are thereby intended to be powerfully thrust out of the Body; Stagnations and Contractions are hereby prevented by increasing the Bloods Circulation, and the Stimulancy of the Solids, whereby the Blood in its Cohæsions and Contacts are broke. But to fetch up the Rear, Sweat is no despicable Help in Bites of mad Dogs, and venomous Beasts; yea, in either a Defect or excessive Flux of the *Menstrua* it is serviceable. Its Assistance is likewise considerable in Gangrenes, Diarrhæas, Obstructions, hepatick Flux, and in tearing, throbbing, and gnawing Pains, and in all intermitting Fevers; all which good Offices it does, either by lessening the Quantity of the Fluids, or breaking and dissolving its Salts, and so cleansing the Vessels, or by restoring the decayed Spring and Vigor of the Solids, and thereby breaking the Cohæsions of the Blood, and the Contact of its Particles by too slow a Circulation. A Defect of the insensible Perspiration from a Default either of the Skin, or Solids, or Fluids, is hereby kindly compensated; also a Scantiness of Urine is often hereby supply'd. But all these special Advantages attend only its due and moderate Use, and in these it answers the Design of the Creator: But yet, notwithstanding all these good Services with many others we reap by it, if it exceeds its due Bounds, being both much and often, it induces a Morbid State, the Parts  
being



being hereby relaxed, and the Body greatly weakened ; hence must necessarily ensue Atrophies, Crudities of the Stomach, Consumptions, Faintings, and Death.

I shall next take Notice of the plain Proofs of the Being and Wisdom of God, appearing in that other great Evacuation of the Skin, called insensible Perspiration ; of which its demonstrably true, that the Discharge made thereby from our Bodies, exceeds all the sensible Evacuations added together. This, it's true, will appear incredible to such, who have never given themselves to the Study of the Human Fabrick, and are Strangers to natural Philosophy ; yet if a true Account be taken by such, of the Food that they eat in a certain Proportion of Time, and a due Estimate be made of all the sensible Evacuations in that Compass of Time, and these be compared with the Increase and Decrease of Weight undergone by their Bodies in the same Time ; they will hereby be enabled to make a true Calculation, how much has been carried off by insensible Perspiration, and will to their surprize find, that it exceeds all the sensible Evacuations. And as that insensible Perspiration was designed by the Divine Being, for the Preservation of the Animal Oeconomy, so its Discharge is not confin'd to any one single Part of the Body ; nor does it belong to a few of them only, exclusive of the other ; but the excretory Glands through which the  
fine



fine subtile Matter of insensible Perspiration is fecerned, are dispersed all over the Body, and are as well upon the common Coverings of the Muscles, as in the Mouth, Nose, Larynx, Lungs, Gullet, Stomach, Intestines, &c. Now the Being, Wisdom, and Providence of a Supreme and Alwise Creator, and Almighty and Merciful Preserver, may very justly be gathered from the following Considerations.

First, From the noble and useful Instruments, which are subservient to the Preparation of this Matter for its Elimination by Perspiration, by commixing, diluting, attenuating, grinding, and breaking the Cohæsiions of the Aliments, into such minute Particles, as to fit them to fly off insensibly, and thereby prevent their becoming noxious to our Bodies.

Again, an Infinite Wisdom appears from the just proportioning the Matter, and Pores to each other; because the Perspiration which is so necessary and advantagious to our Bodies, requires a due Magnitude of the Ducts of the Secretory Glands; for should they be larger or laxer, than was just necessary to emitt with Ease the invifible Matter, they would exceed that due Largeness which constitutes their Usefulness, and would bring Destruction upon the Animal Oeconomy, by a too early Emission of a great Part of our Fluids, before proper Digestion, and Attenuation: But on the contrary, if either the Diameters of the Particles of insensible Perspiration were larger, than



than these of the Cavities of the Vessels; or if the Diameters of the Vessels were shortned, and the Cavity contracted, the Matter of this Perspiration would not have Liberty to enter the Ducts, and consequently not to fly off, by both which Health is lost, and succeeded by a Morbid State of Body.

Further, Wisdom infinitely exceeding theirs, who pretend to account for all the stupendous Works of the Creation, by a casual Concourse of senseless Atoms, or from the Eternity of the World's Existence, or an Infinite Succession of Finite Causes, which is infinite Nonsense (pardon the Expression,) appears from the providing an Evacuation, so easy and void of Trouble to us, for so large a Quantity of excrementitious Matter, and from placing the proper Instruments thereof in all Places of the Body, in order to be ready at all times to carry off that Heap of Matter, which being residuous and useless to the Nutrition of our Bodies, would otherwise immediately become hurtful to us, by distending and overloading the Vessels, and renting asunder the small Cohæsions of the slender Fibres. Such Wisdom is also discoverable from the Minuteness of the Particles to be perspired; for its absolutely necessary, both to the Nutrition and Growth of our Bodies, and to the Secretion and Extrusion of these Particles themselves, that they should be thus small, otherwise they would have either caused a preternatural Relaxa-



Relaxation of the dilatable Solids, or a Rupture of the Vessels, or in Consequence of either produced Putrid Ulcers of the Body. A Design appears likewise from the Consideration, that the Quantity of Matter perspired, is adapted to the delectable Enjoyment of Life; for if this Quantity had exceeded its due Measure, too great a Part of our Fluids had been spent by this means, and the Blood would have been left a thick grumous Mass, incapable of either Circulation, or affording Nutrition: If, on the contrary, it had been less than its Measure, the Cohæsion and Attraction of the Globules of our Blood would have been thereby increased, and the whole rendered sily, from the Force and Quantity of the Fluids overpowering the Solids. A Divine Care for the Safety of Man, may be gathered from the fit Provision that's made for a due and natural Perspiration, by a temperate Air; for when this is cold, the Pressure of the Atmosphere is so great, as to cause too violent a Contraction of the Fibrous Parts, and straiten the Excretory Ducts, so as to lessen Perspiration.

If, on the other hand, the Air be damp and foggy, it loosens and supples the Fibres, and so fills the Pores of the Skin with the floating Serosities in the Air, and in the Body, and diminishes the Contraction of the Vessels, that they have not Force sufficient by their Elasticity to transmit the Fluids. And moreover, the Air it self is so much weakned by the  
Fogginess



Fogginess thereof, that the Particles thereof which are mixed with the Blood, cannot exert themselves with sufficient Force to raise and swell the Globules of the Blood, and carry them on in their Course with a due and regular Motion ; from whence it happens that they make nearer Approaches to each other, and cohere more strongly than is consistent with the Health of the Body ; for hereby the Blood is render'd too fizy to emit a due Proportion of Matter by Perspiration.

Finally, If we are encompassed with too intense an Heat, the Fibres are thereby relaxed, the perspirable Matter retained, and the Fluids encreased ; hence Inflammations and Fevers. A wonderful Care and Concern for Mankind is shewn, in that these Discharges which are made by Perspiration, differ in different Persons, and that in a due Proportion to the real Differences that there is betwixt them, and the Circumstances in which they are placed, as Age, Constitution, Climate, Season, or Way of Living ; for shou'd Weak and slender Persons perspire as much as those of more healthy and robust Constitutions, what meer Carcases would they quickly become ! how soon should we behold them the Images of the King of Terrors ! On the contrary, should robust and healthy Persons perspire no more than such as are languishing under Weakness, they would as quickly be overloaded and pressed down with Diseases of the contrary Nature. The Great God, who gives



to every Man his particular Constitution, to one a healthy and strong, to another a weakly and sickly one, according as his own Infinite Wisdom directed him, thought proper to make such a just and due Difference in the Discharges made by insensible Perspiration, as was suitable to these different States and Conditions of Mankind : He that does all Things by Weight and Measure, Γεωμετρεῖ, in all his Works, has thus provided for the comfortable Subsistence of his Creature.

*Secondly*, The Wisdom of the Great Creator, in preparing this Evacuation for the Preservation of his Creature Man, does further appear from the Necessity of it, either to the Continuation of Life, or at least the Comfort of it. Its Necessity may be gathered, from the Quantity of Matter perspired, and from the Consideration, that a Suppression or Diminution of it for some time considerable, cannot be sufficiently compensated either by one or by all the sensible Evacuations, unless it be a very slight and recent Indisposition : for if the Matter be hindred of entering the Excretory Ducts, or stopt when got into them, it will require great Judgment and Caution, to prevent what would naturally arise from thence ; because it so alters the Blood and its Juices, that 'tis a Work of Difficulty to restore them to their due firm Contexture, Serviceableness, and Evacuation.

The Necessity of Perspiration further appears, from the Solitude of Nature, to have it carried



ried on, both by many, and sometimes very different Methods ; for an Obstruction in one Place and Member, is presently relieved by a greater Discharge in the rest : but this will rarely suffice to keep the Body in due Order, ( except in an Athletick Constitution ) unless assisted by Art, and Nature be by proper Methods helped to ease it self through the Skin of all the other Parts of the Body besides the Part obstructed ; or, 2dly, to eliminate by Stool, or by discharging *Flatus's*, which are only the perspirable Matter detained on the Surface of the Body, and discharged by the Intestines, it meeting with the least Resistance there ; for there will always be the greatest Conflux of the Fluids, where there is the least Resistance, and consequently there the greatest Evacuation ; the Quantity of Matter discharged by the Intestines at such a Time, much exceeding their Evacuations at other Seasons ; otherwise this Superfluity remaining in the Body, without any other Vent, would be destructive it. These Discharges are necessary ev'n in a natural healthful State, but much more so in a morbid one ; that when one Part of the Body is attended with a Suppression of this so necessary an Evacuation, other Parts may be supplied with it, to make amends for their Defect in that, 'till Nature or Art have placed Things again in their right Course or Channel. An Ingenious Gentleman well observes, “ That had the Pores “ been of different Forms, Shapes, and Bigness,

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“ and



“ and the Particles of Matter been suited to pass  
 “ each thorough their own particular Pores, a  
 “ Suppression of Evacuation in any one kind  
 “ of these Pores must have surely been follow’d  
 “ by some bad Consequences, which could not  
 “ have been prevented or removed by the Eva-  
 “ cuation of any other Kind. ”

This Evacuation is likewise carry’d on by the Lungs ; for when the outward Skin is so contracted by the external Cold, as not to admit a full Perspiration thorough its Pores, a Compensation is made for this Defect by Respiration ; for then a larger Quantity of Matter is exhaled from the Lungs : Hence it is, that in Frost, or Cold Weather, or when the Spring of the Air is greatly weakened by its Fogginess and Moisture, and the Vessels of the Body relaxed, our Breath appears like a Cloud, or Smoke ; and if the same happen at another Season, as in a Temperate Air, it’s an argument that the Scarf-skin is either too compact, or the Fibres of the Skin too much upon the Tension, to the straitning the Cavities of the Excretory Ducts, or that a part of the Moisture swimming in the Air, hangs upon our Skin, and fills up the Orifices of the Pores, to the diminishing of Perspiration. The Defect of this Evacuation is likewise supply’d by Spitting ; which (as *Sanctorius* well observes) often protracts Old Persons Lives ; for the *Serum* being detained by the Spring and Vigour of the Solids decreasing whereby the Perspiration is lessened, it makes the Blood to become  
 fizy ;



fizy; and if this Discharge of Phlegm by spitting were in them retained, it would further retard Perspiration, being incapable of Ejection through the Miliary Glands, because of the Grossness of its Parts, and Viscidity of its Texture; for in such Old People the elastick Force of the Solids, upon which Digestion depends, is much diminished; hence the Perspiration is so copiously crouded in upon the Lungs and Air Vessels, and coughed up, and thrown off by Spitting, which also would destroy all Respiration by stuffing the Lungs, and quickly kill the Person. The retained perspirable Matter is also in some Part sent off by Sweat, after it has been a little obstructed; hence Sweating upon a Cold, is often found successful among the Vulgar for its Cure: Perspiration is likewise in some Measure helped by yawning, and stretching the Limbs, (as is very ordinary with People of strong Constitutions, either in the Morning or at Night, when sitting up to unseasonable Hours;) for the perspirable Matter sticking either in the Glands, or cutaneous Passages stir up these convulsive Motions or Contractions, whereby the Membranes are shaken, the Contact of the Fibres removed, and the inclos'd Matter thrown off; hence such as have the strongest and firmest Solids, are most addicted to such wholesome involuntary Motions. Vomiting, Retchings, and Belchings are all Assistants in a diminished Perspiration, for thereby the Fibres and Muscles  
of



of the whole Body are shaken and contracted with such Violence, as very much helps to thrust out the Matter that lay in the excretory Ducts ; hence Vomits ushered in with Phlebotomy, do such Feats in recent Colds ; for if used soon after the Attack, they seldom fail to produce the desired Effect.

The Necessity of Perspiration is demonstrable, from the long train of Distempers that follow, upon retaining or fixing the perspirable Matter in the Body, as Fevers continual, remitting or intermitting, Apoplexies, Polypus's of the Heart and great Vessels, Hystericks, Hippo's, Diseases of the Liver and Spleen, Inflammations, Impostumations, Schirrus's, Cancers, Gangrenes, with all other Disorders that a *Plethora* can produce. What a Wise Creator must he be then ? What a good, merciful, and kind Preserver, who first conferred on us, and since continues such an excellent, easy, useful, copious Evacuation as we find this to be ? The Greatness of the Evacuation, the Means whereby proper Matter is prepared for it, the Necessity of its Regularity and Continuance, the Danger there is in its Diminution, and Deaths quickly following its total Obstruction, the many different ways the Author of Nature has provided for our Safety under, or during its Diminution, do all Acquaint us with the Usefulness and Advantages thereof to Human Life ; for without this great Evacuation, Diseases can neither be removed, nor Health continued, our  
Bodies



Bodies are thereby more lightned, than by all the sensible Evacuations put together ; hereby a *Plethora* is prevented, the Lungs are preserved and better'd. And now what Man can be so bigotted to his Atheistical Notions, as not to be struck with Surprize, at the Consideration of these Things, and not be induced thereby to cast away his godly Chance, and an eternal World, and own that all this manifestly appears to be the Work of Almighty Power, guided and directed in all its Actions by Infinite Wisdom, and excited to act by as Infinite Goodness ; for who but such a Wise and Benign Deity could have provided so insensible, burdenless, advantagious, and cheering a Discharge for so much burdensome Matter, an Evacuation made thorough so many, and so fitly Placed, and justly Proportion'd Orifices, and in all Places of the Body, without any Thought, Disturbance, Annoyance, or Grief to us, with which some of the sensible Evacuations are attended ? Behold herein also, the inexpressible Wisdom of God, that this same Evacuation, which certainly must waste and destroy our Bodies makes room for the Reparation of that which is wasted, by the same Work or Manner of Operation, and also that these Parts which hereby were first drained of their Juices, are nevertheless the first and best recruited.







## C H A P. VI.

*Of the Growth and Decay of our Bodies.*

WE shall next consider what Things are requisite to the rendering our Bodies fit to exercise the due and proper Motion of all their Parts, whether Muscles, Vessels, Humours, Solids or Fluids. Now in order to this, in the first Place, Flexibility is absolutely necessary; for a Want of this in the Fibres, Muscles, and Vessels would have produced a speedy and total Obstruction of these Parts of our Bodies, and wholly impeded voluntary Motion: And again, to the producing of such a Flexibility, and to the Preservation of it in such a Production, it was necessary that the sundry coherent Parts, or attractive Particles, should in some Muscles be chang'd from a more severe and close Connexion or Contact, to a more lax and slight one; and on the contrary, that in others the Attraction or Contact should be encreased; but still this Laxness mentioned in the first necessary Attraction, should not proceed so far, as to occasion a Discontinuance of Contact; because, thereupon would immediately ensue a Rupture of



of the Fibres : A small Separation of these Contacts, either in a Fibre or Muscle, changing its once attractive into a new repellent Force. Further, that the Continuance of this so necessary a Contact may be preserved, it's requisite that both Muscles and Vessels should be constituted of the most slender and thin Fibres, and that these Fibres be composed of the most minute Particles of due Sizes, Figures, and Surfaces : And that all this might happen successfully and with advantage to this, and that the Coalefcencies, and Concretions of the Fibres might be prevented, it's further requisite that they should be continually diluted with a convenient Fluid constantly passing among the Fibres, yet contain'd in its proper Vessels : Now, tho' these minute Vessels were designed, and do accordingly serve to render our Bodies flexible, yet it is certain, that the continual Circulation of their contained Fluids, and their muscular Motion, must inevitably break off, and grind in Pieces the small Particles adhering to their Insides ; which small Particles thus worn off, intermix with the Liquor in the Vessels, are tossed about the Body, and finally, are cast off by insensible Perspiration. Nay, ev'n the Parts of the contain'd Fluids themselves, being agitated attenuated and broken to Pieces by their own perpetual Circulation, proceed at length to the Miliary Glands, are there secreted from the Blood, and from thence evaporated ; whence must ensue a constant Decay

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and Waste, and at last a total Destruction of the Body.

But the Wise Author of Nature has wonderfully provided for the Prevention of this, and the Preservation of his Creatures, by giving them such proper Food as repairs the Loss sustained in both Solids and Fluids from the Circulation of the Humours, or Action of the Solids, by the Nourishment that it affords: Hereby we are preserved from Death, and our Bodies from Destruction; for by these Aliments the wasted Parts, whether of Solids or Fluids, are again restored and apply'd to their proper Places, and the Body not only preserved but strengthened. The Method whereby the Nourishment of the Solid Parts is effected and accomplished is difficult to be understood; but that we may gain some Notion herein, we must know that the Solids of our Bodies are composed of other Parts vastly more minute than themselves, and these again of smaller, so that at last, the encreasing Parvity exceeds our Comprehension; these Parts of differing Magnitudes grow up by a Divine Assistance to the beautiful Body of Man.

The Nature of our Aliments informs us, That this Division of these Minute Parts that compose or constitute the greater, must be of such wonderful Extent, as will serve convincingly to demonstrate to a serious and impartial Considerer, that our Bodies owe their original Production, and consequent Preservation  
to



to an Almighty Power; for tho' our Bodies when grown up are of a considerable Bulk, and seem a great Mass of Solids strongly compacted, yet are we ascertained, and that to a Demonstration, that the whole of them is only a Heap of meer Nerves or Filaments, and that this Heap derives its Being from a very small Particle, nourished and increased by a formerly liquid Fluid like to the Nervous one. *Malpighius's* incubated Egg deserves the Perusal of all ingenious Persons on this Subject: As does also *Rayph* on *Embrio's* and *Fœtus's*; whence we discern that the original *Stamen* of the Solids (which at first are very tender, differing from Fluids only in Rest, Figure, and Cohæ-sion,) is a most fine subtile Fluid, whose Particles undergo a most amazing Change, for they become constituent Parts of a Solid, receive Sense, and Strength, and are attached to the other Solids.

This Attachment is not the Effect of accidental Event, but is constantly performed, no doubt, in a Manner well worthy its infinitely Wise Creator. Most probably any one Particle, which is to assist in constituting a Solid, and which now swims about in the Fluid; when it arrives to the Place of its Attachment, which is a Place, either from whence some of the before constituted Solids have been abraded, or where it serves to the strengthening or lengthening of a Vessel, is there fixt, provided that the Place be fit for it, and the Figure, Size,



and Nature of the Particle agree with the Place; but moreover, before this can be effected, it's necessary, that there be a due Force, to drive the Particle to, and fix it in that Place. I say, a due Force, because, should the Fluid act upon the Part about to receive Addition, with too much Violence, it would rather tend to abrade some of the Particles already belonging to the Part, than add new ones; should it on the contrary, act too feebly it would be either insufficient to fix any Particles there, or might be the Occasion of too great an Addition.

Hence we see, what is indispensably necessary to the fitting and accomodating even one Particle to a solid Fibre, for the Growth of our solids, or the Nutrition of our worn and wasted Bodies: Hereby, we also may perceive that this Accretion or Restoration of the Solids must be only made in the smallest Vessels, by a great Number of which, all the solid Parts are constituted. And lastly, we see, that in order to the Conveying of these nutritive Particles into the Vessels, whether Nerves or Arteries, there must be some Fluid, as the Medium of the Conveyance.

Here we may also spend a few Thoughts on the great Pains, and sundry Changes undergone by the nutritive Matter, before it's rightly adapted to this Use: It must undergo the most perfect Actions of Nature, that it may be reduced to a fine or nervous Fluid, which we must reasonably conclude to be the most proper



per for this Purpose. That this same nervous Juyce might be perfected, it was necessary that all the Actions and Secretions should be also perfect, and duly performed through all its various Strainers, to the last Act of Secretion; and that from these repeated Operations, thence should proceed a fine, sticking plastick *Serum* almost destitute both of Taste and Smell; hereby alone can the wasted Parts be renewed. Now, notwithstanding this nutritive Juyce demands such Means, Instruments, and Time to make it fit for its noble Uses and Services; notwithstanding a very small Portion of the Food which we take into the Stomach, after all these Operations is rendred fit for Nutrition; yet a great deal of that small Quantity, by its frequent Circulations, and the saline Matter mixt with it, becomes acid when received into the Blood; for this Reason it's unfit to pass the secretory Vessels, and is therefore returned, which Return also occasions a Demand for fresh Victuals or Food, as absolutely necessary to the Production of fresh Chyle, both to blunt the sharpness of the Blood, and encrease its Quantity, so that Nutrition may duly and regularly be carried on.

The Manner and Causes of the Growth and Nutrition of the slender and imbecil Parts is strange, and deserves our Attention; its well known to these skill'd in Hydrostaticks, that if an Interruption of Motion be given to any Liquor driven through a full Pipe, conick or  
Cylind-



cylindrick, flexible or inflexible, or if it flow out of a broader into a narrower Passage, that it will labour to repel the Sides of its Canal from the Axis of its Longitude: Now by the constant Repetition of this same Operation, the small Vessels of our Bodies, are by Degrees lengthened out. A greater Fineness is a necessary Consequence of their greater Length, and as they grow in Smallness, so are they the more easily affected, and that both, because they are so fine, as scarce to differ from a Fluid, and especially, because that their Cohæ-sions are so small, as to come little short of a State of Dissolution. Now, suppose these Particles had constituted hard and inductile Fibres, and these again had composed rigid Vessels, it would have been utterly impossible that Nutrition should have been carried on, and effected in the Body; for these rigid Vessels would first have resisted the Impulse of the Entrance of the Fluids, at their Extremities for want of a Dilatability, and the constant Impetus of the Fluids would have washed them away, and worn them off; and finally in a short time, they themselves would undoubtedly have contracted and coalesced: In Consequence whereof the Extremities of the Vessels, would have become small Branches of Cartilages, which must have caused Trouble and Uneasiness all over our Bodies.

Let but the Atheist seriously reflect upon any Part, or any State of the Human Body,  
ev'n



ev'n from the first Conception of the *Embryo* in the Womb, to the last Stage of Life; and if he be not utterly devested of Thought and Reason, he must be forced to acknowledge that the whole is an admirably Wise and Good Contrivance of a Divine Almighty Architect; of one who is perfectly acquainted with all the possible Actions of Matter, and has an absolute Power to give to every Part of Matter a Direction and Degree of Motion, necessary sufficient and convenient for the Good and Preservation of the Individual, to which it appertains.

But during the Continuance of this constant and vehement Motion, it will happen, that the extreme Particles, which are rubb'd off and mix'd with the Fluid, must leave an unsupply'd Interstice in the Place of their former Adhesion: This must be the Lot of every Body, and of every Part of the Body, whilst Life remains; but will, most especially, be the Case of Persons of a lively and vigorous Constitution, and who are much employ'd in strong Exercises. Now should this, as it does, continually happen, and was there no Ways and Means appointed for procuring a constant and due supply of other Particles of the same Nature, and adapted to the same Service and Use to the Body, as were the erased ones, how fatal would be the Consequences of it? Here an Infinite Providence has  
mer-



mercifully interpos'd, and has so form'd the Body, that such a Supply is continually made.

A sufficient Quantity of the Aliments taken into the Stomach, is, after a due Preparation in proper Vessels, carried into the Blood, and being reposit'd there, is by frequent Circulations attenuated dissolved and fitted for this Use. Now such of the New Particles as are of the same Nature and Bulk with those that were wasted by the constant Circulation of the Fluid, are commissioned to go, and are sent with a just Quantity of Motion to the Interstices, and are there fix'd. Hereby the Vacuity is fill'd, the Strength of the Vessel maintain'd, and the Solids constantly nourish'd, preserv'd and repair'd; all this is done without any Diminution of the Strength of the Solids, or the Motion of the Fluids.

Here, then, let us stand still, and a little contemplate the inexpressible and incomprehensible Wisdom of the great Author of Nature, that is manifested in the Care that he has herein taken for the Preservation and Prolongation of the Life of Man: He has so constituted Things, that the same is the Cause of Destruction and Reparation, by the same Manner of Operation that the Secretion of Nutrition is effected and perfected, is that which was secreted destroy'd; and on the contrary, that which destroys the former perfected Secretions, is the Means of a new and fitter Supply. Let the Waste of the Body be



as great as it will, the same Thing which was the Cause of this Waste, is the Means of promoting a duly copious Supply. The Parts of our Body, which by Exercise and Labour are first spent, have the first Renewal, and that in Proportion to the Consumption.

But to return: It's certain, that those Vessels are the most subject to be extended, either in Length or Breadth, or to be consumed, or reduced, that are of the most fine Contexture, and greatest Slenderneſs, and that are best fitted to the moving Cause. For this Reason, the less we are distant from the Time of our Conception, Birth, or Childhood, the greater will be the Encrease and Growth of our Bodies.

The larger Vessels in the Body, during the Progress of this Growth, suffer an Extension and Distension of themselves by their contain'd Liquor, whilst the smaller which are only Fibrous Sprigs of the former become Juycelſs are compress'd and Coalesce. Hereby, tho' the Vessel is destroy'd, the Fibre is render'd solid, and therefore the greater must be the Weakness of our Bodies, the nearer they are to their Original; and that as well from the vast Quantity of Fluids contain'd in such an infinite Number of Vessels, and from the great Disproportion of the Solids to the Fluids, as from the greater Distension of the minute and slender Vessels occasion'd by their full Repletion.



Yet still this Repletion, Oh, Wonderful ! together with the Laxness of the Fibres, is the Cause of Dilatability, and this again, of the Elongation and Distension of the Parts.

It's no less wonderful and surprising, that this very Repletion which was in Childhood, the Cause of Dilatability, should afterwards, join'd with this Dilatability, be productive of a Compression and Concretion of the smaller Capillaries ; that the Strength and Firmness of the Fibres should be owing to the Dryness and Coalescencies of them, and that this should be founded on the Loss of their Vessels.

The Vessels that in the Time of Childhood and Youth were of the most fine and delicate Contexture, degenerate into Ligaments, and those that were Ligaments become Cartilages. Hence, we are sure that the Flying off of the minutest Particles of the contained Liquors occasions the small Vessels to undergo a Coalition, as the Union of the greater to the Sides of a Vessel makes it grow together : When these Coalitions and Unions exceed not a due and regular Measure, from them proceed the Strength and Hardness of the Solids : But when these do increase beyond this Measure, when Concretions are a long time multiply'd, and when more than a proper Number of the Vessels unite and coalesce, the Stiffness of Old Age is the necessary Consequent.



## C O R O L L A R Y I.

From these Things we gather, that the Number of Vessels is the greatest in a *Fœtus*, that this Number gradually decreases as we advance in Years, and that by this Decrease Weakness is remov'd, the Strength of Youth takes its Place, and the Body receives an Encrease both of Quantity and Solidity.

## C O R O L L A R Y II.

In Childhood and Beginning of Youth, the Fluids greatly exceed the Solids, but as we grow up to Manhood and Old Age, this Excess constantly and gradually decreases, and the Solids gain the Ascendant both in Number and Strength; from hence, if Life be continu'd long enough, will ensue an excessive Dryness or Defect of Fluids, and at last Death it self.

## C O R O L L A R Y III.

Hence we may also collect, that the Supreme and infinitely Wise Manager of the Universe, hath so constituted Things in the Human Body, that most contrary Effects are produced by one and the same Cause, and that That which at one time is the Occasion



of the Destruction of the Body, is, at another time, that of its Preservation, and that what is the Reason of its Encrease, is also the Cause of its Decrease and Death.

Now, that the Extremities of the Vessels, and their Internal Surfaces, must as we have affirm'd be eras'd and worn off, will be evident from a Consideration of what befalls ev'n the Surperficies of the Body: The *Cuticula*, that is spread as a Covering all over it, is constantly destroy'd and renew'd: Our Hairs and Nails being cut and shav'd, grow again, and we sensibly perceive our Teeth to wear by constant Use, and yet to be repair'd again.

We see from all that has been said, the wonderful Wisdom display'd in the Preservation of the Structure of the Solids, from that Destruction which would ensue the Violent Motion of the contain'd Fluids upon them; Things are so ordered, that a sufficiently large Secretion of similar Matter is made from these very Liquors for their continual Reparation.

From hence also we may discern the Reason, why our Bodies are continu'd so long in a State of vigorous Activity, to be their slow gradual Advance to Puberty, their Continuance in such a State for some Years, and their as slow Decay.

Certain-



Certainly a great Deal of Wisdom is discoverable, not only in the Formation of the Human Body, but in the making that inconceivably small Portion of Matter, of which we at first consist, by the most amazing Ways and Means to arrive at so great a Bulk as is Man when grown up: Without doubt Man is the Creature of that infinitely perfect Being, who knew,

*When the dim Speck of Entity began  
To work its brittle Being up to Man:*

*Dr. Garth.*

Who watches over us in every Stage of our Existence, and keeps all the Parts and Vessels of the Body in their Subserviency to the Good of the whole. How justly might we now triumph over the Atheist? Really, when we consider what plain and legible Characters of himself, the Divine Being has stamp'd upon every Part of the Creation, but especially upon the Lord of this Lower World, upon this noble Creature Man, how can we help concluding that there is no such Thing as a real speculative undoubting Atheist in the World? Can we do these incredulous Gentlemen any Injustice, if we affirm of most or of many of them, that 'tis an unlimited and unlawful Desire of living as they list, and giving the Scope to their wicked Inclina-

clinations, and an Unwillingness to be under any Restraints of Religion, that induce them to laugh at the Existence of God, and ridicule every Thing that has a sacred Stamp. Were the God that we profess to believe, and of whose Existence we have such Demonstrative Proofs, the Lazy, Indolent, and Careless Deity of the *Epicureans*, or was he one that had not Regard to Piety and Virtue, they would never speak against his Existence, nor use any Endeavours or Struggle with themselves to root him out of their Minds: 'Tis because, he is a Being of uncontaminated Purity and Holiness, that cannot take Complacency in the Persons or Practices of Sinners; 'tis because he hath constituted the most Pure and Righteous Laws, and made them of universal Obligation, and threatened the wilful and continued Violation of them with everlasting Torments; I say, 'tis these Things that are the principal Inducements with most to disbelieve his Being.

The Ways whereby the Atheist pretends to account for the various and wonderful *Phænomena* of Nature, are the most ridiculous and absurd; to assert, That all Things owe their Being to an unintelligible Chance, to a casual Concourse of Atoms, when a Wise Design does so manifestly shew it self in every Thing that we can contemplate with due



due Attention, is the most irrational Nonsense.

To assert that the World is Eternal, that there has been an Infinite Succession of Men or Dependent finite Beings, cannot afford him any help ; for an Infinite Succession of Finite Beings is a downright Contradiction : Such are more deserving of our Pity, than of our Indignation ; unless when they endeavour to propagate Infidelity, and make Converts to their Atheistical Opinions.

*F I N I S.*





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